

## CLAIMS

1. An engine transition test instrument comprising:
  - virtual engine test means for simulating a transition state in which an engine rotational speed or torque changes with time; and
  - actual engine transition test means for conducting actual transition testing using an actual engine and actual control means that controls that actual engine,
    - wherein the virtual engine test means comprises
    - simulation means for simulating behavior of an engine by a transition engine model
  - created based on data obtained by driving the actual engine while changing a value of at least one controlled factor;
    - virtual control means that emulates the actual control means and supplies an engine control signal to the simulation means; and
    - the actual engine transition test means comprises means for switching to an engine control signal output from the virtual control means from a corresponding portion of an engine control signal output from the actual control means, and supplying a switched signal to the actual engine.
2. The engine transition test instrument according to claim 1, wherein the virtual engine test means further comprises a control value operation means that supplies a control value for the controlled factor to the virtual control means, causes simulation results by the simulation means to be displayed on display means of an operator, and corrects the control value according to an operation by the operator.
- 25 3. The engine transition test instrument according to claim 1, wherein the actual control means is configured so as to perform feed back control with referencing an output value of the actual engine and the instrument comprises means for correcting an output value from the actual engine that has changed when an engine control signal output from the virtual control means was supplied to the actual engine to a value before such a change

was made, and feeding back the corrected value to the actual control means.

4. An engine transition test method comprising:

- 5 a first step of creating a transition engine model based on data obtained by driving an actual engine while changing a value of at least one controlled factor in a transition state in which an engine rotational speed or torque changes with time;
- 10 a second step of emulating actual control means that controls an actual engine, generating an engine control signal based on a control value set for the controlled factor, and operating the transition engine model as a virtual engine; and
- 15 a third step of switching to an engine control signal generated in the second step from a corresponding portion of an engine control signal output from actual control means, and supplying the switched signal to the actual engine.

5. The engine transition test method according to claim 4, wherein the second step is repeated while changing the control value, and the third step is performed when an output value from the virtual engine satisfies objective performance.

6. The engine transition test method according to claim 4, wherein an output value from the actual engine that has changed when an engine control signal generated in the second step was supplied to the actual engine is corrected to a value before such a change was made, and the corrected value is fed back to the actual control means.

7. A computer program that realizes, by being installed on an information processing system,

- 25 first means for creating a transition engine model based on data obtained by driving an actual engine while changing a value of at least one controlled factor in a transition state in which an engine rotation speed or torque changes with time;
- second means for emulating actual control means that controls an actual engine, generating an engine control signal based on a control value set for the controlled factor,

and operating the transition engine model as a virtual engine; and

third means for switching to an engine control signal generated in the second step from a corresponding portion of an engine control signal output from actual control means, and supplying the switched signal to the actual engine.

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8. A storage medium that is readable with an information processing system on which the computer program according to claim 7 is stored.